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Since 1947, the Navy has relied on the Aviation Qualification Test (AQT) of general ability and the Flight Aptitude Rating (FAR) --a composite of mechanical comprehension, spatial aptitude, and biographical tests--to select naval aviators. While this selection system has served the Navy well, the failure rate of pilot selectees has remained consistently high (although certainly less than the attrition rate before using a selection test battery), averaging 20-25% over the last 20 years. The cost of these failures represent millions of Navy training dollars lost each year. As a result, researchers at the Naval Aerospace Medical Research Laboratory have attempted repeatedly to improve selection test batteries. While previous efforts have failed, new research results appear to have the potential to improve our selection of pilots and naval flight officers.

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⟹ Two projects at the Laboratory that have demonstrated the potential for the improved prediction of both undergraduate and fleet flight performance are a naval aviator selection program and a fleet performance prediction program. Results from these two computerized projects are particularly exciting because for the first time in 40 years we have demonstrated that cognitive and one-dimensional tracking tasks account for increased variance in predicting "completion" of primary flight training. That is, the tests predict those individuals who will pass or fail flight training, even after their initial selection using the present selection battery, the AQT/FAR. Alternately, using multidimensional tracking and multitask tests, we have demonstrated the ability to predict an individual's flight grade and the number of flight hours required to complete primary training. Finally, certain of the multitask tests even predict the air combat maneuvering performance of fleet pilots as they perform on instrumented ranges! *« ·, ···/·, µ·/·² ··/··/·· ·µ······/ · ·/····* *·µ···/· ; (··¹)* ⟵

The importance of these results are manifold. Our research leads us to believe that in the very near future we can substantially increase the quality of our pilot and naval flight officer applicants by selecting individuals: (1) who are most likely to complete training, (2) who will perform flight tasks more proficiently, and (3) who require fewer flight hours to complete training. In addition, we will be able to recommend training pipelines and fleet operational communities that are more compatible with individual abilities. The application of these results should enhance aviator effectiveness and ultimately increase Navy operational readiness, while reducing attrition and accidents in the fleet.

In the near future, we foresee that automated testing stations will be in place for administering and scoring both the new performance tests and the present AQT/FAR selection battery. Using a centrally located automated information system linked to stations across the country, Navy managers would be able to select and assign the best available pilots and naval flight officer candidates to naval aviation fixed or rotary wing training pipelines from thousands of applicants.

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RESEARCH INFORMATION BULLETIN

A series of reports by the
Naval Aerospace Medical Research Laboratory

AN IMPROVED AUTOMATED SELECTION SYSTEM FOR NAVY PILOTS

Since 1947, the Navy has relied on the Aviation Qualification Test (AQT) of general ability and the Flight Aptitude Rating (FAR) --a composite of mechanical comprehension, spatial aptitude, and biographical tests--to select naval aviators. While this selection system has served the Navy well, the failure rate of pilot selectees has remained consistently high (although certainly less than the attrition rate before using a selection test battery), averaging 20-25% over the last 20 years. The cost of these failures represent millions of Navy training dollars lost each year. As a result, researchers at the Naval Aerospace Medical Research Laboratory have attempted repeatedly to improve selection test batteries. While previous efforts have failed, new research results appear to have the potential to improve our selection of pilots and naval flight officers.

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